

THE
HISTORY AND CONSTRUCTION
OF THE MILL AT BURNT MILLS, MD.

Initiation Thesis
of John Rodgers Beall.

BETA OF MARYLAND OF TAU BETA PI.

Date

1/16/31

RESEARCHER

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PG 1 IS

MISSING.

Box 1
Beall

site of the present mill had been burned. He had never heard the date of the destruction of the mill, but he thought it had occurred a half or three quarters of a century before his birth."

The Rambler stated further that the miller had showed him an antique copper stencil found by the miller which read "Glen Cairn Mills Family Flour". It is claimed that traces of a foundation and mill race were found, apparently of this mill.

While two or three of the inhabitants stated that they had heard that the mill had once turned out bone fertilizer as a product, the mill has only ground flour and meal during the years which they personally remember. Quoting again from the Rambler;

"---everything ---about the mill -the miller, of course, included- is whitened by the flour and meal ground there and which has been grinding there so long that no man's memory runneth to the contrary."

An overshot wheel originally drove the mill, while the grinding was done by burrs or stones made of some "hard volcanic rock" , and said to have been imported from France. The wheel was replaced by a turbine, and the old mill-race by a concrete flume, in which were scratched (while the concrete was soft) the name, Kloppmeyer, of the man who built the flume, and the date, 1911. Thus, it seems that the turbine and flume were installed in 1911, since the end of the penstock leading from the end of the flume to the turbine is embedded in the concrete of the flume, and there are no evidences of its having been installed later. The mill-stones, however, were replaced by a roller mill somewhat earlier. According to the stories of two of the inhabitants, which agree

closely, this was about 1895. After this the mill turned out three grades of wheat flour, as well as corn meal, which was ground on stones retained for the purpose.

A deed transferring the ownership of a piece of land later known as "Beall's Industry", which contained the mill, is the earliest mention of this property found in the Land Records of Montgomery County, Maryland. It then belonged to Walter Beall. How he obtained it is unknown. The deed recorded the sale of the property by Walter Beall to Peter Kemp and James Willson Perry, thru Upton Beall, his attorney. The date of this transaction was June 29, 1803. Containing "one hundred acres, more or less", the property sold for six hundred pounds.

Perry died, and the rights to his moiety, or share were conveyed by his children (then very young) by an enabling Act of the General Assembly to George W. Logan, on April 9, 1814. Logan then conveyed the moiety to William Canby, also on April 9, 1814. Canby, on July 23, 1814, obtained the other moiety (Kemp's). He then sold the property to George Janney, on March 26, 1821.

Janney, wanting to borrow money from the Farmer's and Mechanic's Bank of Georgetown, gave to the bank as security the notes of one Micajah Welding, who had made a conditional purchase of the lands and mill. Janney then conveyed to John J. Stull, the cashier of the bank, thru two deeds, one on March 9, the other on May 2, both 1821. The sheriff of Montgomery County, acting due to default of Welding, conveyed to John J. Stull on March 17 and July 18, 1823. The bank, after holding the property about a year, sold it to Nathan Lufborough thru its president and cashier (Stull).

In this transaction the area mentioned is still "one hundred acres more or less", while the price is three thousand dollars.

Lufborough associated himself with James Philips and Richard Israel. In 1847 Lufborough drew up a contract of sale with James L. Bond. Israel and Philips were in accord with this and the contract was signed on April 5, 1847. Then Lufborough died before the property was actually sold, naming, in his will, his son, Hamilton, as executor, and leaving the Burnt Mills property to his wife. The wife, Harriet W., thru Hamilton, conveyed the mill and land to Bond on October 26, 1858.

Bond then ran the mill for a period of about thirty years then, in a deed recorded May 17, 1890, he sold the property to William E. Mannakee and Samuel D. Waters. Quoting from the Land Records, Bond and his wife ,

"--- for and in consideration of the sum of ten thousand dollars, and divers other good and valuable considerations, have granted, bargained, and sold unto the said parties of the second part all of that lot or parcel of ground situate, lying, and being in said county which is distributed as follows; viz. It being all that portion or part of the land popularly or commonly known as the Burnt Mill, which lies north of the road ---- leading from the mill ---- to Colesville and the Sandy Spring Meeting House."

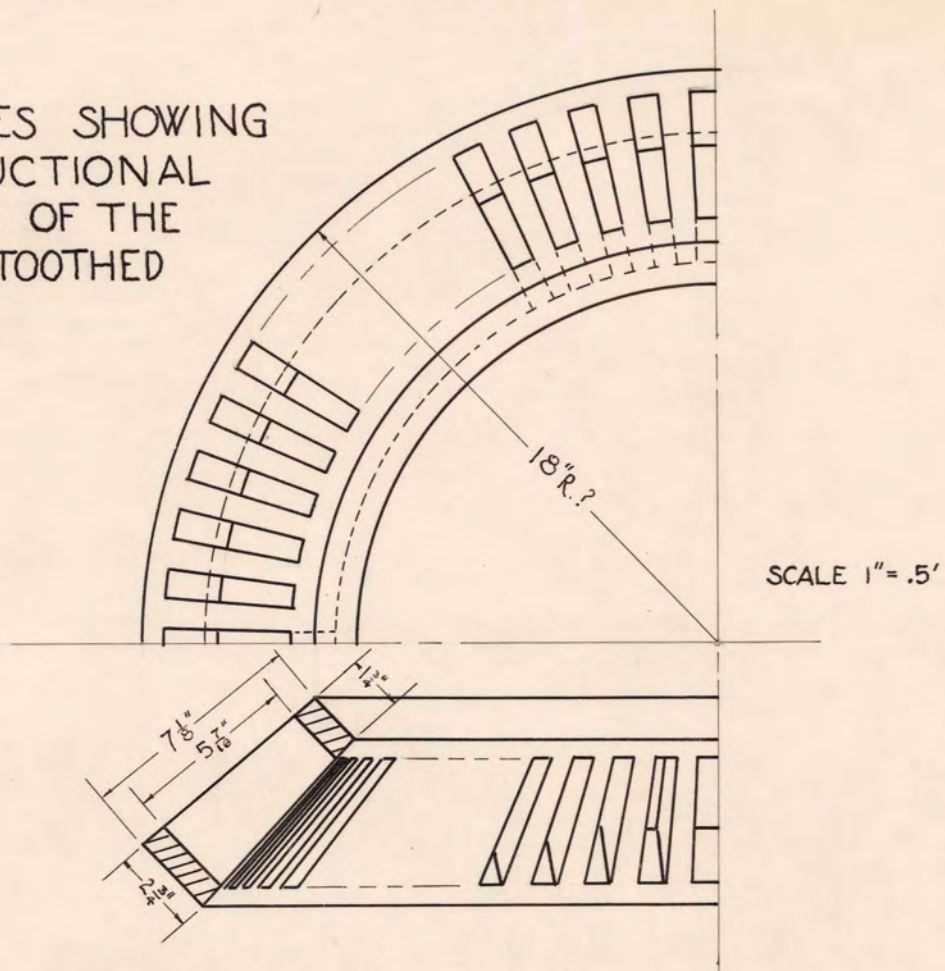
Waters and Mannakee ran the mill, under their names, as a firm until, in 1894, they decided on an amicable disrupting of their partnership. This resulted in a deed from Waters to Mannakee

for that part of the tract containing the Northwest Branch and the mill. This took place on Jan. 24, 1894, Waters retaining the rest of the lands. Mannakee received a little over sixteen acres with the mill.

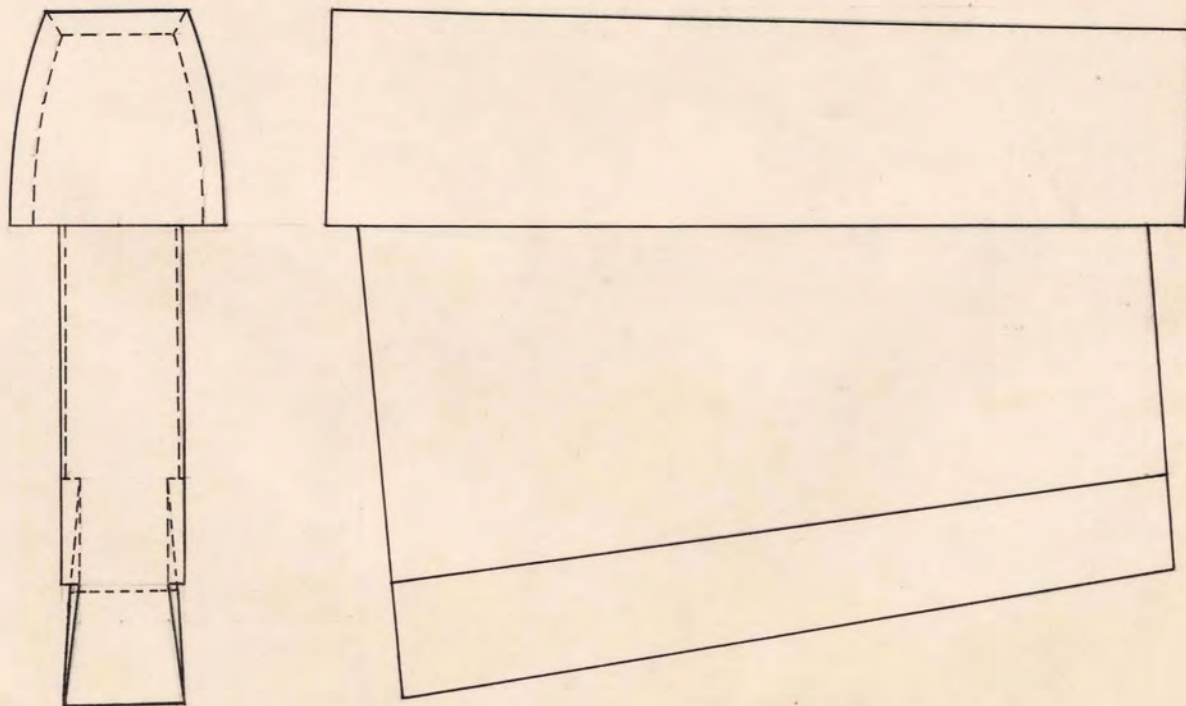
Mannakee and his wife mortgaged the mill and land with the "Savings Institution of Sandy Spring", and when they defaulted, the property was taken over by the bank. On July 7, 1906 the mill and land were sold to Dr. George W. Bready for six thousand one hundred dollars, thru Alban G. Thomas, his agent. DR. Bready was the last owner of the mill while it was in operation.

It has not been possible to ascertain the exact date of the discontinuance of operation of the mill, but it was in the early twenties of the twentieth century. It continued to stand idle until the spring of 1928, when it was torn down to the stone foundations, which alone remain to testify for the activity that once held sway.

SKETCHES SHOWING
CONSTRUCTIONAL
DETAILS OF THE
WOODEN-TOOTHED
GEAR.



APPROXIMATE SHAPE OF TOOTH (WOOD) - SCALE $\frac{3}{4}'' = 1''$



B. Construction.

The gorge in which the mill lies, provides one of the best locations for a water power mill in the section. The stream has a sufficiently rapid fall to provide the necessary head of water without an overly long race. A wide curve in the stream at this point allows further shortening of the race. Lastly, the formation of the land is such that a comparatively small dam will impound a large quantity of water.

The mill was driven originally by an overshot wheel supplied by a ditched mill-race. This race was dug from the dam to Gum Spring Branch (a tributary of the N.W. Branch at this point), following a straight line from the dam to the mill. The Gum Spring Branch was then dammed and its bed used as part of the race; further man-made ditches carrying the water from the branch to the wheel. The water of the Gum Spring Branch was thus added to the race water. (see Liber JA42, folio 109)

The mill at this time consisted of only one section. The reference for this statement is a plat in the above mentioned Liber JA42, on which the mill is shown by a single rectangle. The meager information given above is all that was available concerning the mill when driven by the wheel.

The mill, as a roller mill, consisted of two parts, as shown in figures 1 & 2. Referring to fig. 1, it will be seen that the mill was of frame construction, above a stone foundation. As the frame portion of the mill has been destroyed, no detailed des-

cription will be attempted.

The walls of the left hand section (fig. 1.) vary in thickness from, roughly, twenty-one to twenty-eight inches. They are in the shape of a rough rectangle, forty-one by thirty-seven feet, the longer side paralleling the stream. Parallel to this long wall, and at an average distance from it of nine feet, runs an inner wall. A second inner wall lies about the same distance from the first. These walls all stand on the outcropping of the bed-rock at this point. Fig. 4. shows the walls in their relative positions. The rear wall (away from the stream) is some feet higher than the front wall, as is seen in fig. 3. thru fig. 6. In fig. 4., however, the end only of this wall is visible, directly above the penstock in the center of the picture. Furthermore a good comparison of the construction of the walls of the two sections may be made from fig. 4.

The walls of the foundation of the right hand section, (figs. 1. & 2.) average in thickness about two feet. This foundation, also a rectangle, is approximately thirty by thirty-six feet. These walls are laid up with mortar joints, and are considerably more uniform than those of the other section, which are laid up without mortar. Outcroppings of the native rock also form the foundation for these walls, and even project into the corner nearest the flume about three feet. Inside the foundation the ground slopes rapidly towards the stream, the floor having rested on the ground at the rear and on a ledge in the wall some three feet above the ground at the front.

The two sections are so placed that the wall toward

the stream of the right hand section is fifteen feet further from the stream than the corresponding wall of the left hand section; while the rear wall of the former is eight feet further from the stream than the rear wall of the latter. (see figs. 7., 10., 11.) The two sections are separated by a space of 11 feet thru which runs the turbine penstock.

The only mention of a dam was in an article by the Rambler (Sunday Star May 14, 1916) in which he stated that the mill was supplied from water impounded by a concrete dam one hundred eighty feet long, seventeen feet high, seven feet thick at the base, and two feet thick at the top. This dam no longer exists.

The water was carried from the dam to the turbine by a concrete flume installed at the same period as the turbine. (referring to statement of Mr. McCeney) Following a curved path the flume had a length of approximately two hundred seventy-five yards (paced to site of old dam). Irregularities of the land dictated this path thru the need for a gradual fall, and a minimum amount of cutting and filling. Figs. 8. & 9. will give an idea of the path of the flume, looking from the discharge end. The walls of the flume are about six inches thick, while the flume itself averages about five feet across and four to four and one half feet deep. Referring to fig. 10. gives an idea of the construction of the discharge end of the flume, as well as its relative location with respect to the foundations of the mill. Drive water for the turbine entered the penstock shown

here, while the rectangular hole was for overflow. The difference in level between the floor of the flume and the turbine is roughly seventeen feet.

Removal or investigation of the turbine was found impossible, it being too thoroughly rusted together for dissembling. The housing, however, is about three feet in diameter. The drive from this turbine was thru a vertical shaft. (see figs. 11, 12, 13.) Fig. 12 shows the dog coupling used on this shaft. The shaft itself is $2\frac{1}{2}$ " in diameter, tapering, in 6", under the gear keyed to its upper end to $2\frac{1}{8}$ " in diameter. In fig. 12 the smaller shaft (seen bent over to the left in fig. 11) is apparently the shaft of the control valve.

Supporting the main drive gears and shafts, was the timber framework shown in figs. 11, 13, 14, 15, . This framework was originally roofed over. (see figs. 1, 2.) Sawmill timbers were used for this part as the saw marks are plainly visible. The majority of the beams used were 8" by 10" in cross section. The large piece lying on top parallel to the stone wall, and nearest to it, is 13" by 15" in cross section and 56" long. A detailed list of the measurements of the other members of the framework is considered unnecessary. This last mentioned timber carried the bearing for the horizontal shaft running into the mill. Hand made iron bolts of $\frac{3}{4}$ " square stock upset and threaded for $2\frac{1}{2}$ " to 3" were used to hold the framework together, along with mortise and tenon joints in the timber.

By looking closely at figs. 14 & 15, one may see the bevel gear keyed to the turbine shaft. The upper support for this shaft was a babitted journal bearing above the gear. As for the gear itself, it was of cast iron, having 34 teeth, an outside diameter of approximately 23", and a width of face of 6". The circular pitch measures roughly two inches. This gear meshed with another bevel gear on a horizontal shaft running into the mill. The construction of this second gear is of interest.

While only the segment shown in figs. 16 & 17 is left, that is sufficient to show the original form of the gear. It was about three feet in diameter and had a frame of cast iron in which were set wooden teeth. This frame was in the form of a bevel gear in which the teeth were replaced by a series of equally spaced slots. The face was $7 \frac{1}{8}$ " wide. The larger end of each slot was $\frac{7}{8}$ " wide, the smaller end, $\frac{3}{4}$ " wide; while the sides of the slot were $5 \frac{7}{16}$ " long and were placed as elements of the face cone. Thru these slots were driven wooden teeth, the part projecting above the face in each case being formed as a single gear tooth, while the part projecting below in each case was in the form of a dove-tail with the large end at the bottom. Consecutive teeth were then locked in place by a wooden wedge also in the form of a dove-tail (large side up) which fitted between those on the teeth. (see sketch, also gives approximate size of the wooden tooth.)

No other material than the statement of Mr. Tucker was found pertaining to the machinery within the mill. According to him the mill contained, first, a cleaner for the wheat brought to the mill. From this cleaner the wheat was conveyed to a hopper and then weighed, the farmer being paid for the clean wheat. The wheat was then stored. Taken from storage as required, and carried by conveyer belts and bucket elevators, the wheat was lifted to a hopper at the top of the mill. Gravity feed then carried it to the rolls, of which there were "ten double stands". These were steel rolls, with different clearances between the rolls for crushing in the different steps. Between each step of the rolls there were elevators to raise the wheat for the next step. The first rolls removed the hulls from the wheat, etc.

During the rolling the wheat was cleaned at times by fans, etc., the information not being very clear here. The last operation was "bolting", where the flour was sifted thru a large piece of silk, called the "bolt". The flour passed thru the cloth while the screenings were led off to one side, dumped on the floor and sold as feed. There were three grades of flour, depending on the fineness and whiteness. Further, a set of stones for grinding corn meal were retained, since stone ground meal has a better reputation than roll ground meal. The majority of the machinery was housed in the section on the right in figs. 1 & 2.

The razing of the frame portions of the mill has left only certain of the sills of the older section in evidence. These may be seen in figs. 3, 4, 5, 6. They are hand hewn, 11" by 13" and have a sloping lap joint cut in them where they were joined. This joint was held by four wooden pins 1" to 1½" in diameter and projecting 6" out of the lower half into the upper half.

A cast iron pulley lies in the stream directly before the mill. It is 47 1/2" in diameter and has an 8" face. Small sections of the conveyor and elevator belts, also, are lying on the ground around the mill, one still having an elevator bucket attached; but these are the only remaining evidences of all this machinery.

Summary.

First mention of the mill in the land records of Montgomery County, is in 1803. From this time the mill changed hands several times, and was changed and improved by the replacing of the wheel by a turbine, the race by a concrete flume, and the stones by a roller mill. At present the stone foundations of the mill, the concrete flume, and the turbine (buried in the ground) are alone left on the site; the mill having ceased operation about ten years ago, and the frame sections having been torn down early in 1928.

Bibliography.

Bound volume of the articles published in the Sunday Star by Mr. Harry Shannon under the name of "The Rambler". Owned by the Washingtoniana section of the Public Library of the District of Columbia. Vol. 1 , pages 44 & 101 ; Vol. 2 , page 25 .

The Land Records of Montgomery County, Md., at Rockville. Libers JA 42 (109); JA 2 (386); JGH 7 (265); X 311 ; L 19 .

A statement by Mr. W. McCeney, a farmer of the section who has lived near the mill all his life.

A statement by Mr. Tucker, at present the blacksmith at Burnt Mills and formerly employed in the mill while it was in operation.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11

Fig. 12



Fig. 13



Fig. 14



Fig. 15



Fig. 16



Fig. 17